# Moving to the Alternative Policy Scenario & Beyond

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# 2005 – An Important Year for U.S. Energy Policy

- The U.S. House recently passed a bill that embodies many elements of the Administration's energy policies.
- The U.S. Senate is developing their bill.
- The first major energy bill should emerge from the U.S. Congress in over 12 years.
- Will it put the U.S. on an "Alternative Policy Scenario"?

# Direct and Indirect Effects

- To answer this question, it is important to consider both the *direct* and *indirect* effects of both the energy bill and Administrative actions taken under existing authorities.
- The direct effects include the consequences of various regulatory and financial actions taken by the government.
- The indirect effects reflect the transformative energy technologies that may emerge from the many R&D authorizations.

# Expected Elements of New Energy Legislation - Efficiency

- New Federal energy efficiency requirements.
- New appliance and equipment standards.
- New efficiency promotion programmes.
- Tax credits for hybrid and diesel vehicles.
- Possible reform of fuel economy standards.
- Program to introduce hydrogen vehicles by 2015.

# Expected Elements of New Energy Legislation -Renewables

- Federal renewable use requirements.
- Investment & production credits for renewable energy.
- Renewable Fuel Standard (mandatory use of renewable motor fuels)

# Expected Elements of New Energy Legislation – Oil & Gas

- Outer continental shelf production incentives.
- Authorization of oil production from a very-limited area in the Artic National Wildlife Refuge (ANWR).
- More streamlined licensing of LNG terminals.
- More streamlined licensing of refinery expansions and new refineries.

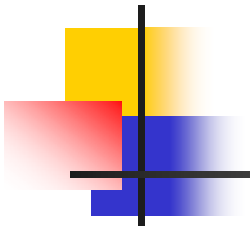
# Expected Elements of New Energy Legislation – Coal & Nuclear

- Incentives for coal-gasification technologies.
- Promotion of carbon capture and storage.
- Streamlining of nuclear plant licensing.
- Government insurance for licensing and other risks for a limited number of new nuclear plants.

# Expected Elements of New Energy Legislation – Electricity

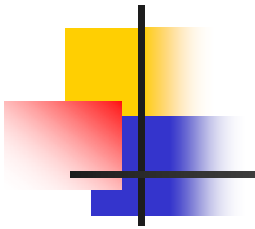
- Improvements to transmission.
  - Rate reform.
  - Advanced technologies.
  - Reliability standards.
  - Non-discriminatory access.
- Repeal of PUHCA.
  - Competitive revitalization of industry.
- Market transparency.

# Expected Elements of New Energy Legislation – R&D Science/Efficiency



- Biological technologies.
- Catalysis.
- Hydrogen.
- Fusion.
- Advanced vehicles and buildings.
- Advanced industrial technologies.
- Next-generation lighting.

# Expected Elements of New Energy Legislation – R&D Renewables/Nuclear



- Solar.
- Bioenergy.
- Wind.
- Geothermal.
- Advanced fuel recycling.
- "Nuclear Power 2010" programme.
- Next-Generation Nuclear Power Plant.

# Expected Elements of New Energy Legislation – R&D – Fossil Fuels

- Carbon capture and storage.
- Non-conventional oil.
- Ultra deepwater resources.
- Methane hydrates.

# Estimating the Impacts

- Easier to estimate the direct impacts of energy legislation (e.g., changes to energy efficiency requirements, tax credits for renewable energy).
- More difficult to estimate the indirect impacts of energy R&D.
- Nonetheless, the indirect impacts may, in the long run, be the most important.

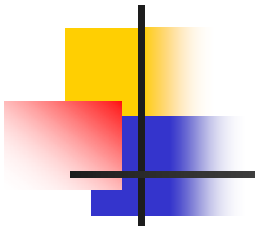
# Direct Effects - Reducing Energy Demand & Emissions

- Administrative increases in CAFE and CAFE reform + promotion of hybrids and diesels
  - 1.5 mb/d by 2015; 3.0 mb/d by 2030
- Other energy efficiency standards and incentive programmes
  - Reduction of electricity demand by 10% to 15% (2025)
  - Reduction of natural gas demand by 5% (2025)

# Direct Effects - Increasing Domestic Energy Supply

- ANWR
  - 1 mb/day by 2015
- Offshore oil and gas
  - 0.5 mb/day by 2015 from Gulf of Mexico
- Other domestic sources
  - O.5 mb/day by 2015

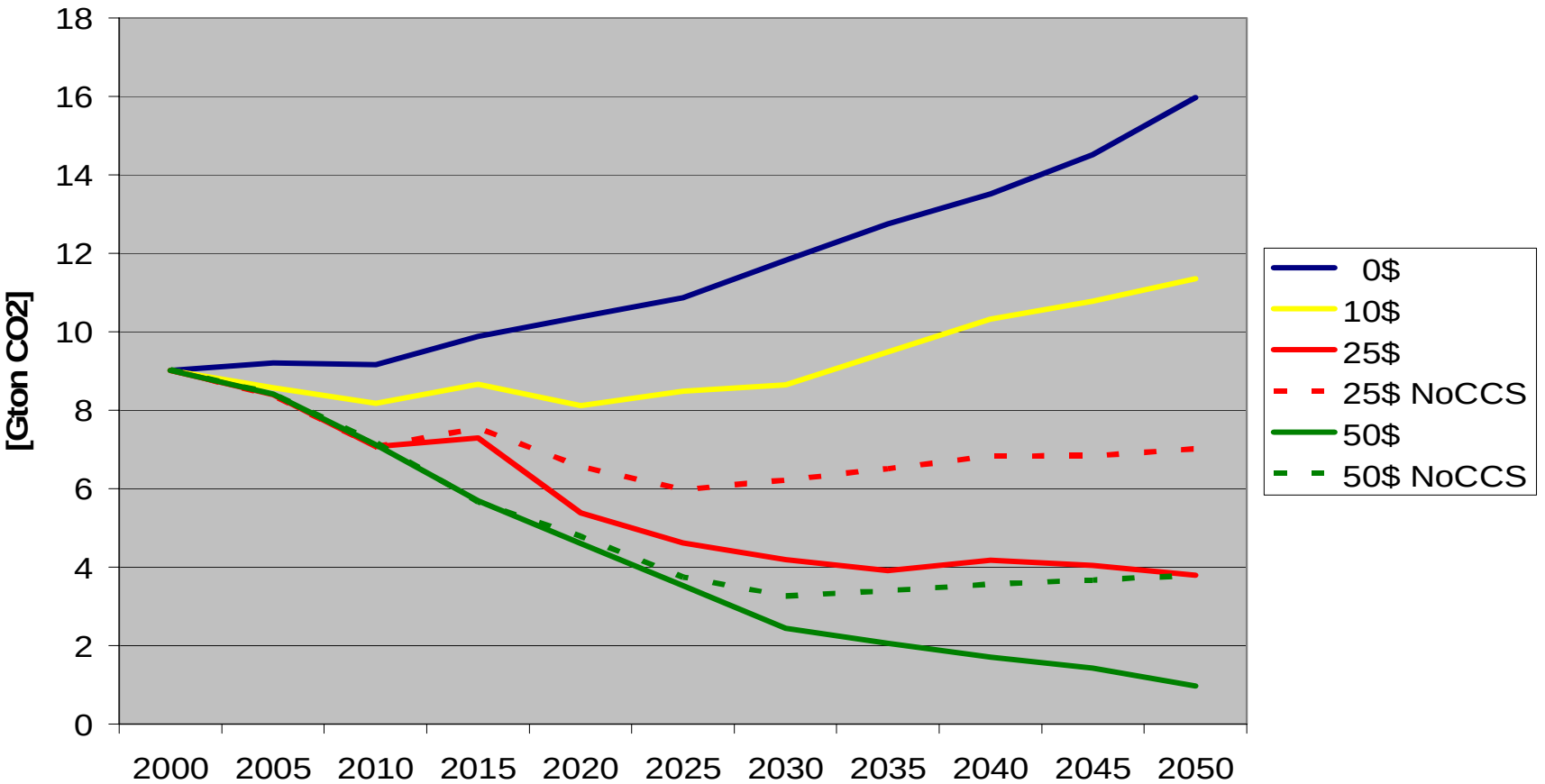
# Indirect Effects - Transformative Energy Technologies



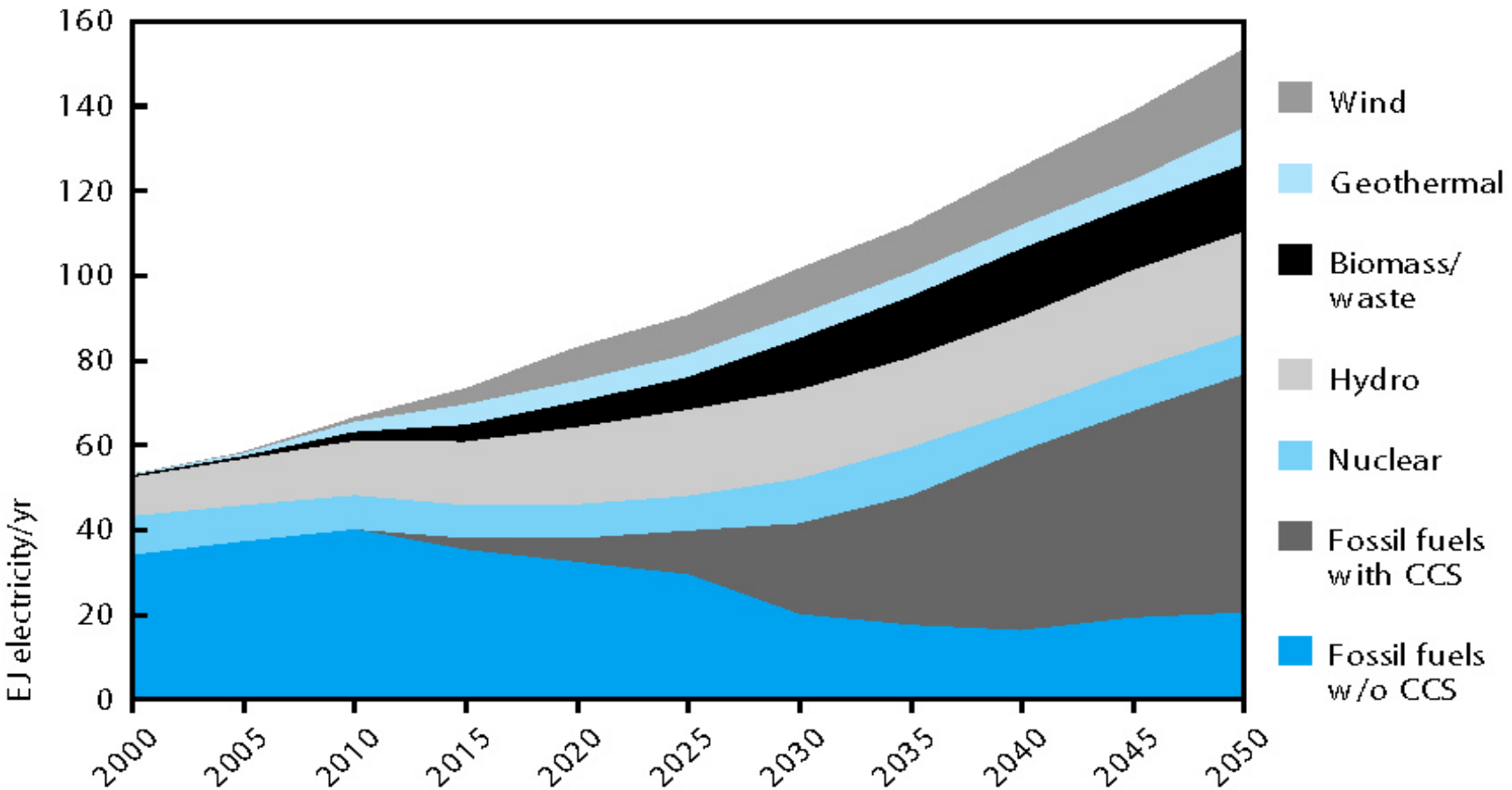
- Advanced nuclear power.
- Clean fossil fuels with carbon capture & storage.
- Advanced renewable technologies.
- Unconventional sources of supply:
  - Coal to liquids.
  - Shale oil, oil sands.
  - Natural gas hydrates.

# Electricity Sector $CO_2$ Emissions w & w/o CCS

## (from IEA ETP Model)

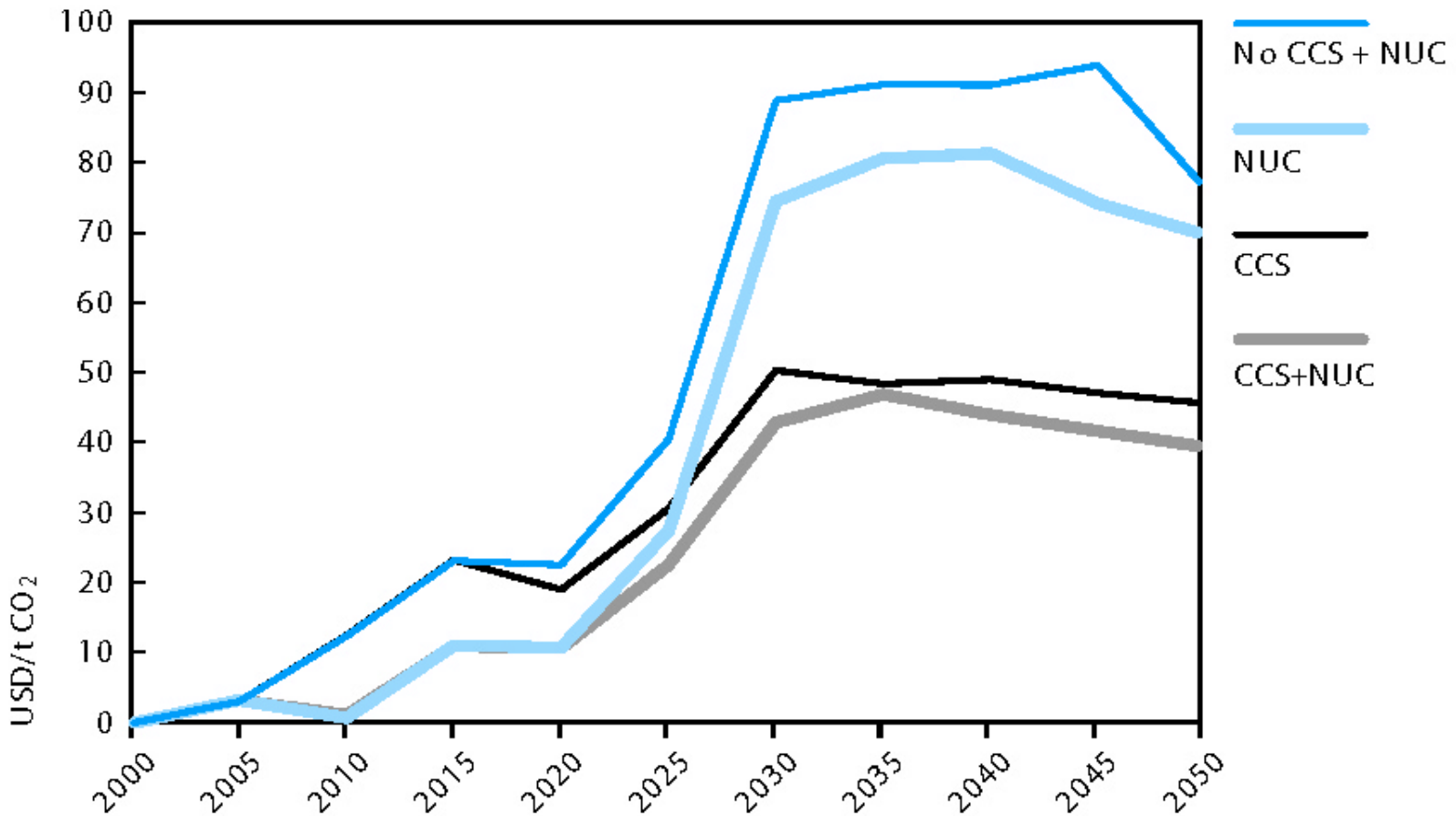


# Electricity Production from Clean Energy Technologies
## (from IEA ETP Model)



# Importance of Nuclear & Carbon Capture & Storage

## (from IEA ETP Model)



# Conclusions

- Direct effects of new policies and programs important to create a better supply-demand balance and maintain current energy economy.
- Transformative energy technologies will be needed to solve long-term energy security and climate challenges.
- If sufficient effort is made to develop them, they will achieve the IEA's "3 Es" at a reasonable cost.